WHAT IS CLAIMED IS

1. A method for performing positioning in a radio system, the method comprising

transmitting an identifier signal suited for channel estimation through at least two different channels,

receiving said at least two identifier signals,

estimating by means of the received identifier signals a spatial signature of the channels, and

defining by means of the spatial signature of the signals information related to the location of a receiver or transmitter.

2. A method as claimed in claim 1, defining as the information related to the location at least one direction between the receiver and transmitter by means of the spatial signature of the signals.

3. A method as claimed in claim 1, defining the information related to the location by comparing an estimated spatial signature with previously known spatial signatures and defining as the location a position whose previously known spatial signature is closest to the estimated spatial signature.

4. A method as claimed in claim 1, transmitting the identifier from at least two different antenna elements in order to transmit the identifier signals through at least two different channels.

5. A method as claimed in claim 1, defining the information related to the location according to the map coordinate system when the location of at least the transmitter or receiver is specified in a map coordinate system.

6. A method as claimed in claim 1, forming the spatial signature by utilizing several channel estimate matrices generated at different time instants.

7. A method as claimed in claim 1, forming the spatial signature by utilizing several channel estimate matrices generated on different frequencies.

8. A method as claimed in claim 1, forming the spatial signature by utilizing several channel estimate matrices calculated from different reception antennas.

9. A method as claimed in claim 6, generating from different channel estimates at least one covariance matrix of at least one channel and forming the spatial signature by means of at least one specific vector of the covariance matrix.

10. A method as claimed in claim 6, generating a singular value decomposition for a channel estimate matrix, by means of which specific value vectors of the covariance matrix are defined for the definition of the information related to the location.

11. A method as claimed in claim 9, defining a first dominant delay path by utilizing specific values of the channel covariance matrix calculated for different delay paths or the channel singular values in such a manner that the dominant delay path is the path having the highest specific value energy.

12. A method as claimed in claim 9, defining a first delay path whose specific value energy exceeds a predefined threshold value.

13. A method as claimed in claim 1, utilizing additionally in the positioning at least one of the following measurements:

defining the direction of arrival as a DOA measurement,

defining the angle of arrival as an AOA measurement,

for the purpose of comparing the direction of reception and transmission with each other.

14. A method as claimed in claim 1, utilizing additionally in the positioning at least one of the following measurements:

measuring the time of arrival as a TOA measurement,

measuring the time difference of arrival as a TDOA measurement,

for the purpose of defining the distance between the transmitter and receiver.

15. A method as claimed in claim 1, wherein the identifier signals are at least partly uncorrelated.

16. A method as claimed in claim 1, wherein the identifier signals are orthogonal.

17. A method as claimed in claim 1, using the elements or parameters of the channel estimate corresponding to the shortest delay in the spatial signature of the signals.

18. A method as claimed in claim 1, generating the identifier signals in such a manner that the signals are transmitted from different antenna elements at different time instants.

19. A method as claimed in claim 1, generating the identifier signals by coding the signals to be substantially non-interfering to each other.

20. A method as claimed in claim 1, generating the identifier signals by transmitting the signals on different frequencies.

21. A method as claimed in claim 1, wherein a terminal serves as the receiver and performs its own positioning.

22. A method as claimed in claim 21, signalling necessary information on the antenna structure or antenna element location of the base station to the terminal.

23. A method as claimed in claim 1, signalling the spatial signatures or the parameters of the spatial signatures of the received signals to a base station and defining the location of the terminal in the network part of the radio system.

24. A method as claimed in claim 1, using one or more base stations in defining the location of the terminal.

25. A method as claimed in claim 1, calculating the received power by means of the spatial signature of the signals and maximizing the received power in relation to the transmission direction for the purpose of defining the information related to the location between the transmitter and receiver.

26. A method as claimed in claim 1, estimating, by the terminal, the location of the unit transmitting the identifier signal.

27. A method as claimed in claim 1, wherein the identifier signals are broadcast signals.

28. A method as claimed in claim 27, wherein the identifier signals are common pilot channel signals of a WCDMA radio system.

29. A method as claimed in claim 1, wherein the identifier signals are channel-specific training sequences.

30. A method as claimed in claim 1, wherein the identifier signals are transmitted on a dedicated channel.

31. A radio system comprising as a transmitter and receiver at least one base station and terminal, of which at least the transmitter com-

prises an antenna that comprises at least two antenna elements, and which radio system performs positioning, wherein

the transmitter is configured to transmit an identifier signal suited for channel estimation through at least two different channels,

the receiver is configured to receive said at least two identifier signals,

the receiver is configured to form by means of the received identifier signals a spatial signature of the channels, and

the radio system is for the purpose of positioning adapted to define by means of the spatial signature of the signals information related to the location of the receiver or transmitter.

32. A radio system as claimed in claim 31, wherein the radio system is configured to define as the information related to the location at least one direction between the receiver and transmitter by means of the spatial signature of the signals.

33. A radio system as claimed in claim 31, wherein to transmit the identifier signals through at least two different channels, the transmitter is configured to transmit the identifier signal from at least two different antenna elements.

34. A radio system as claimed in claim 31, wherein the radio system is configured to compare an estimated spatial signature with previously known spatial signatures and to define as the location a position whose previously known spatial signature is closest to the estimated spatial signature.

35. A radio system as claimed in claim 31, wherein when the location of the transmitter or receiver is specified in a map coordinate system, the radio system is configured to define the information related to the location according to the map coordinate system.

36. A radio system as claimed in claim 31, wherein the receiver is configured to form the spatial signature by utilizing several channel estimate matrices generated at different time instants.

37. A radio system as claimed in claim 31, wherein the receiver is configured to form the spatial signature by utilizing several channel estimate matrices generated on different frequencies.

38. A radio system as claimed in claim 31, wherein the receiver is configured to form the spatial signature by utilizing several channel estimate matrices calculated from different reception antennas.

39. A radio system as claimed in claim 36, wherein the receiver is configured to generate from different channel estimates at least one covariance matrix of at least one channel, and to form the spatial signature by means of at least one specific vector of the covariance matrix.

40. A radio system as claimed in claim 36, wherein the receiver is configured to generate a singular value decomposition for a channel estimate matrix, by means of which the receiver is configured to define specific value vectors of the covariance matrix for the definition of the information related to the location.

41. A radio system as claimed in claim 37, wherein the radio system is configured to define a first dominant delay path by utilizing the specific values of the channel covariance matrix calculated for different delay paths or the channel singular values, and the radio system is configured to define as the dominant delay path the path having the highest specific value energy.

42. A radio system as claimed in claim 37, wherein the radio system is configured to define a first delay path whose specific value energy exceeds a predefined threshold value.

43. A radio system as claimed in claim 31, wherein the radio system is also adapted to utilize in the positioning at least one of the following measurements:

a DOA measurement of the direction of arrival,

an AOA measurement of the angle of arrival,

for the purpose of comparing the direction of reception and transmission with each other.

44. A radio system as claimed in claim 31, wherein the radio system is also adapted to utilize in the positioning at least one of the following measurements:

a TOA measurement of the time of arrival,

a TDOA measurement of the time difference of arrival,

for the purpose of defining the distance between the transmitter and receiver.

45. A radio system as claimed in claim 31, wherein the identifier signals are at least partly uncorrelated.

46. A radio system as claimed in claim 31, wherein the identifier signals are orthogonal.

47. A radio system as claimed in claim 31, wherein the identifier signals are broadcast signals.

48. A radio system as claimed in claim 47, wherein the identifier signals are common pilot channel signals of a WCDMA radio system.

49. A radio system as claimed in claim 31, wherein the identifier signals are channel-specific training sequences.

50. A radio system as claimed in claim 31, wherein the identifier signals are transmitted on a dedicated channel.

51. A radio system as claimed in claim 31, wherein the radio system is configured to use the elements corresponding to the shortest delay in the spatial signature of the signals.

52. A radio system as claimed in claim 31, wherein the base station is configured to transmit the identifier signals from different antenna elements at different time instants.

53. A radio system as claimed in claim 31, wherein the base station is configured to code the identifier signals to be non-interfering to each other.

54. A radio system as claimed in claim 31, wherein the base station is configured to transmit the identifier signals on different frequencies.

55. A radio system as claimed in claim 31, wherein the terminal is the receiver and adapted to perform its own positioning.

56. A radio system as claimed in claim 55, wherein necessary information on the antenna structure or antenna element location of the base station are signalled to the terminal.

57. A radio system as claimed in claim 31, wherein the terminal is configured to signal the spatial signatures or the parameters of the spatial signatures of the received signals to the base station and to define the location of the terminal in the network part of the radio system.

58. A radio system as claimed in claim 31, wherein the radio system is configured to use one or more base stations in defining the location of the terminal.

59. A radio system as claimed in claim 31, wherein the radio system is configured to calculate the received power by means of the spatial signature of the signals, and to maximize the received power in relation to the transmission direction for the purpose of defining the information related to the location.